FCC TEST REPORT (15.247)

REPORT NO.:	RF140718E03
MODEL NO.:	ECW5320, ECW5320-L, ECW5320-C, SS-AC1200-US
FCC ID:	HEDSSAC1200
RECEIVED:	July 18, 2014
TESTED:	July 29 to Aug. 16, 2014
ISSUED:	Aug. 28, 2014

APPLICANT:	Accton Technology Corporation
ADDRESS:	No.1, Creation Rd. III, Science-based Industrial Park, Hsinchu, Taiwan, R.O.C.

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140718E03	Original release	Aug. 28, 2014

1. CERTIFICATION

PRODUCT:	802.11ac Dual-Band Wireless Access Point, Dualband Ceiling/Wall/Desktop Enterprise AP (802.11ac)
BRAND NAME:	Edge-corE, IgniteNet
MODEL NO.:	ECW5320, ECW5320-L, ECW5320-C, SS-AC1200-US
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Accton Technology Corporation
TESTED:	July 29 to Aug. 16, 2014
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)** ANSI C63.10-2009

The above equipment (Model: SS-AC1200-US) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *Aug. 28, 2014*
(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *Aug. 28, 2014*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.44dB at 16.84766MHz
15.205 15.209 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2487.50MHz, 2390.00MHz & 2483.50MHz
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

NOTE: 1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.25GHz, and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz. For the 5.15~5.25GHz and 5.725~5.850GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.72 dB
Radiated emissions (6GHz -18GHz)	4.00 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11ac Dual-Band Wireless Access Point, Dualband Ceiling/Wall/Desktop Enterprise AP (802.11ac)
MODEL NO.	ECW5320, ECW5320-L, ECW5320-C, SS-AC1200-US
POWER SUPPLY	DC 12V from Adapter or DC 48V from PoE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 300Mbps 802.11ac: up to 866.7Mbps
OPERATING FREQUENCY	**For 15.407** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
NUMBER OF CHANNEL	**For 15.407** 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	**For 15.407** 802.11a: 312.608mW 802.11ac (VHT20): 381.551mW 802.11ac (VHT40): 630.536mW 802.11ac (VHT80): 166.267mW **For 15.247** 802.11b: 416.869mW 802.11g: 519.996mW 802.11n (HT20): 982.948mW 802.11n (HT40): 363.576mW
ANTENNA TYPE	Please see NOTE

DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter x1

Note:

1. 2.4GHz and 5GHz technology can transmit at same time.
2. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
3. The EUT has two brand names, two product names and four model names, which are identical to each other in all aspects except for the following:

Brand	Product Name	Model Name	Software
Edge-corE	802.11ac Dual-Band Wireless Access Point	ECW5320	Fat
		ECW5320-L	Fit
		ECW5320-C	Fit
IgniteNet	Dualband Ceiling/Wall/Desktop Enterprise AP (802.11ac)	SS-AC1200-US	Fat

From the above models, model: **SS-AC1200-US** was selected as representative model for the test and its data were recorded in this report.

4. The antennas provided to the EUT, please refer to the following table:

For 2.4G WLAN used						
Set	Transmitter Circuit	Antenna Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Antenna Type	Connecter Type	Cable Length (mm)
1	Chain (0)	3.16	2400~2500	PCB Dipole	IPEX	255 (Gray)
	Chain (1)	4.04				150 (Blue)
For 5G WLAN used						
Set	Transmitter Circuit	Antenna Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Antenna Type	Connecter Type	Cable Length (mm)
1	Chain (0)	5.07	5150~5850	PCB Dipole	MMCS	65 (White)
	Chain (1)	3.97				140 (Black)

5. The EUT must be supplied with a power adapter as following table:

Brand	Model No.	Spec.
APD	WA-24Q12FU	Input: 100-240V, 0.6A, 50-60Hz Output: 12V, 2A DC power cable: 1.83m, unshielded

6. The EUT incorporates a MIMO function without beamforming.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	1TX (Diversity)	2RX
802.11b	1 ~ 11Mbps	1TX (Diversity)	2RX
802.11g	6 ~ 54Mbps	1TX (Diversity)	2RX
802.11n (HT20) & 802.11n (HT40)	MCS 0~7	1TX (Diversity)	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS0~8 (256QAM) Nss= 1	1TX (Diversity)	2RX
	MCS0~8 (256QAM) Nss= 2	2TX	2RX
802.11ac (VHT40) & 802.11ac (VHT80)	MCS0~9 (256QAM) Nss= 1	1TX (Diversity)	2RX
	MCS0~9 (256QAM) Nss= 2	2TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.3)

7. Test modes are presented in the report as below.

Pre-test Mode	Power Source
A	With Adapter
B	With PoE (PoE only test not sale)

From the above pre-test modes, the worse spurious emission was found in Mode A. Therefore only the test data of the mode was recorded in this report.

8. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
1	√	√	√	√	√	With Adapter
2	√	-	-	-	-	With PoE

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

NOTE: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane**.

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION ON TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	13

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	13
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	27

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	30deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Tim Ho
RE≥1G	22deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng
OB	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

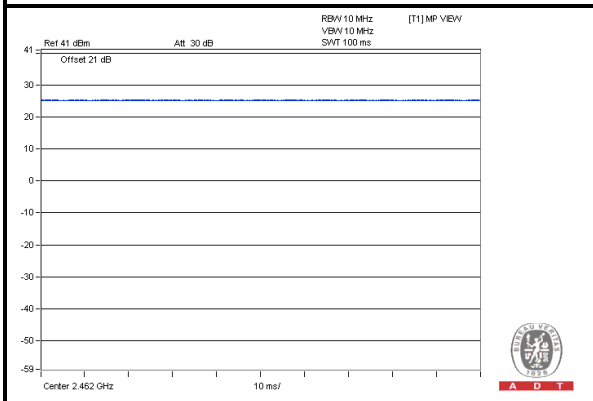
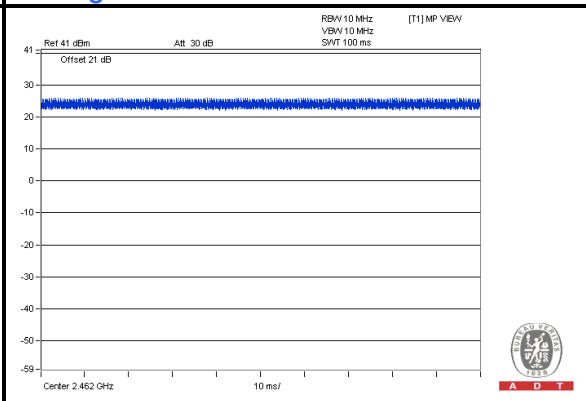
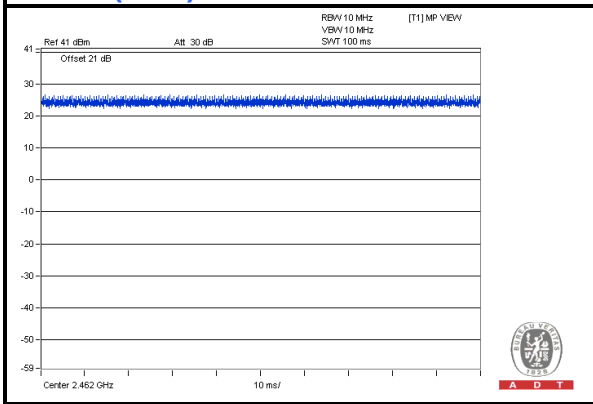
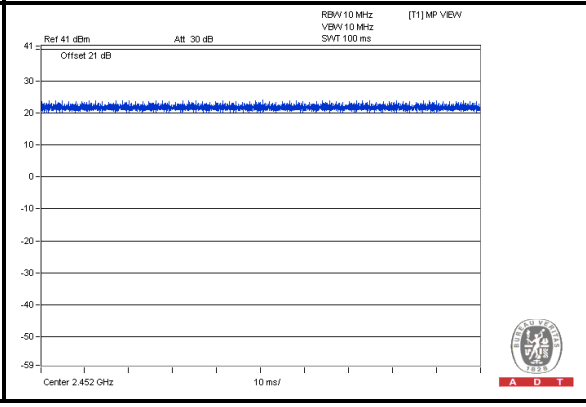
ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.

802.11b	802.11g
	
802.11n (HT20)	**802.11n (HT40)**
	

3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	iPod shuffle (For adapter mode)	Apple	MC749TA/A	CC4DN29UDFDM	NA	Provided by Lab
	iPod shuffle (For POE mode)	Apple	MD778TA/A	CC4JMCMXF4T1	NA	Provided by Lab
B	HUB	Linksys	SD208	NA	NA	Provided by Lab
C	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	NA	Provided by Lab
D	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC	Provided by Lab
E	POE	Motorola	PD3501G/AC	C11426552000000835	FCC DoC	Supplied by client

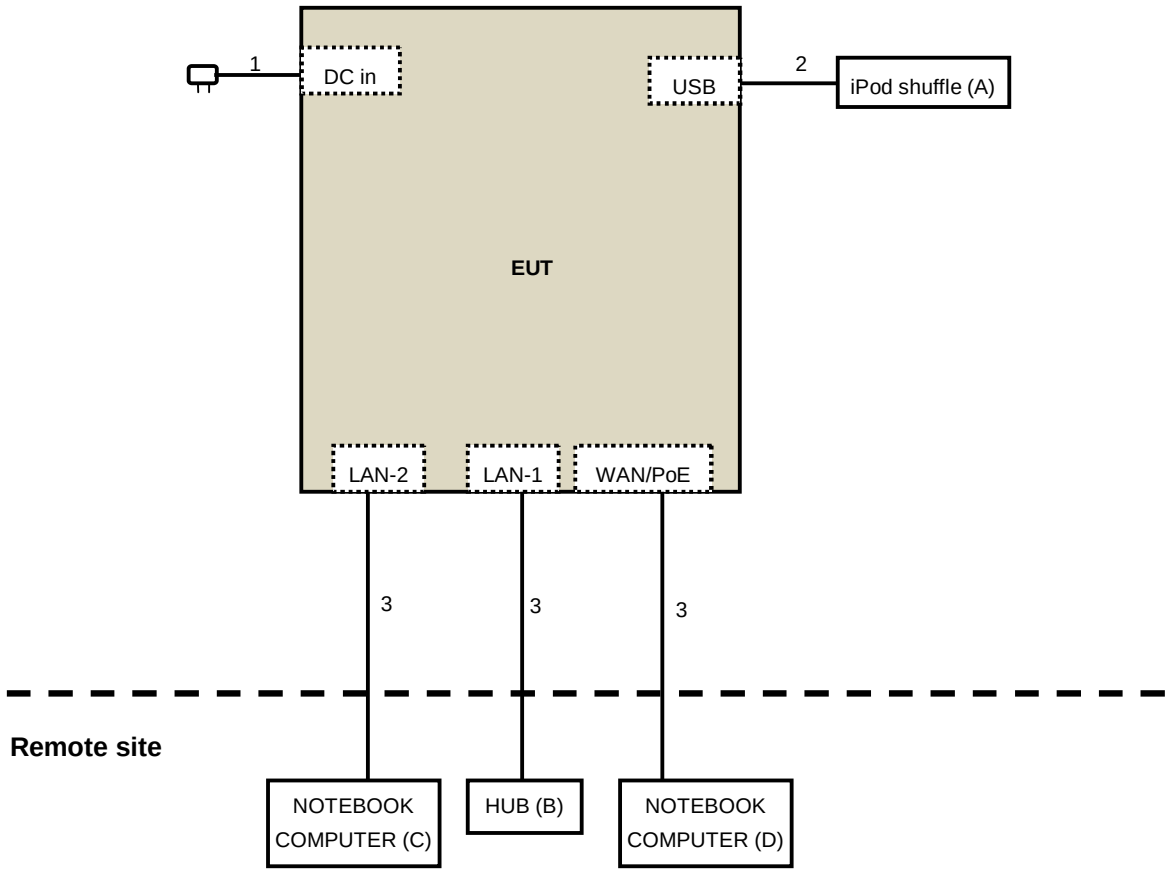
NOTE:

1. All power cords of the above support units are non-shielded (1.8 m).

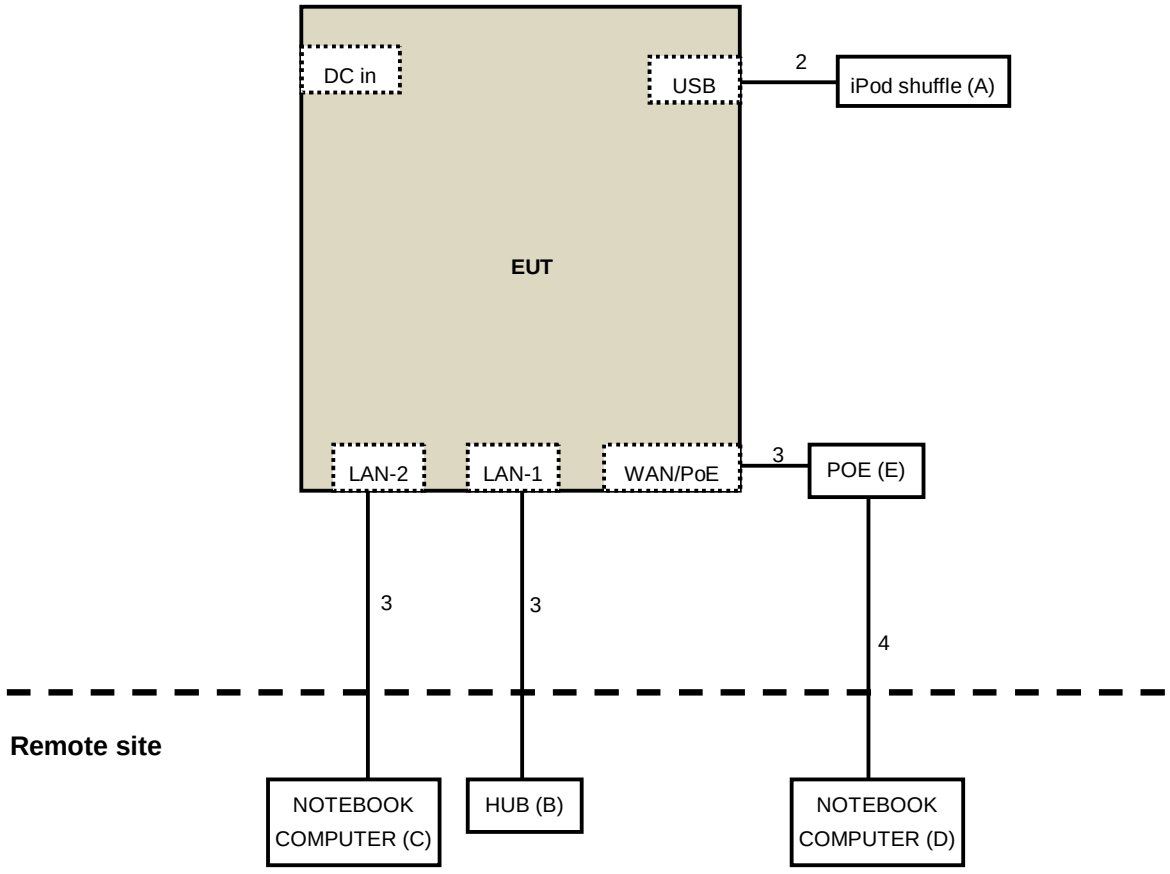
No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1.	DC	1	1.5	No	0	Supplied by client
2.	USB	1	0.1	Yes	0	Provided by Lab
3.	RJ-45	1	10	No	0	Provided by Lab
4.	RJ-45	1	3	No	0	Provided by Lab

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For Adapter Mode:



For POE Mode:


DC in
USB
2
iPod shuffle (A)
EUT
LAN-2
LAN-1
WAN/PoE
3
POE (E)
3
3
4
Remote site
NOTEBOOK COMPUTER (C)
HUB (B)
NOTEBOOK COMPUTER (D)

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: July 29, 2014

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.
b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
d. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

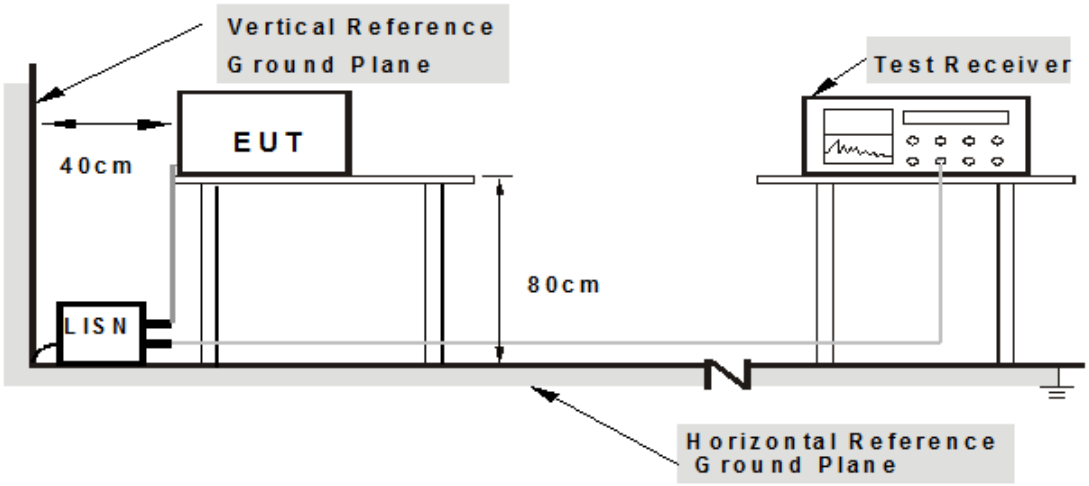
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared computer system (support units C & D) to act as communication partner.
3. The communication partner ran test program “MP_TEST.exe[Ver 1.3.8.0]” to enable EUT under transmission/receiving condition continuously.

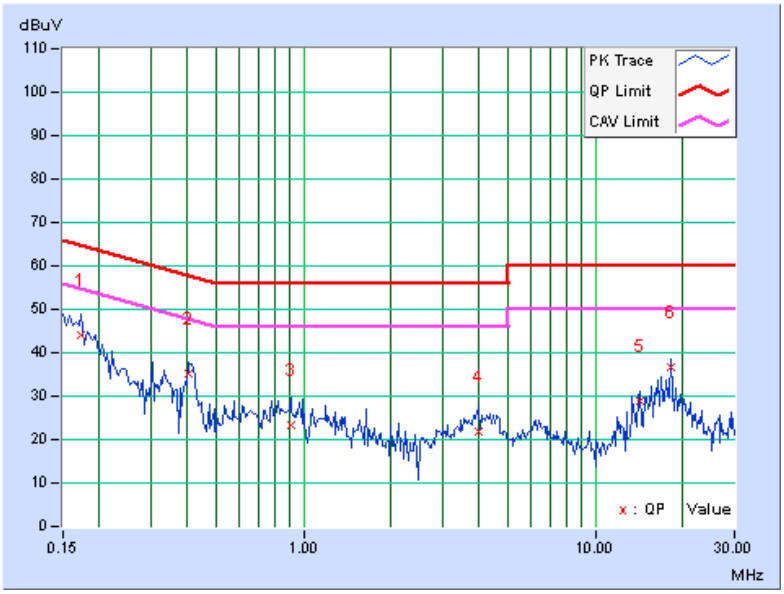
4.1.7 TEST RESULTS (MODE 1)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	0.07	44.14	30.00	44.21	30.07	64.79	54.79	-20.59	-24.73
2	0.40391	0.09	35.28	25.21	35.37	25.30	57.77	47.77	-22.40	-22.47
3	0.90391	0.12	23.21	14.94	23.33	15.06	56.00	46.00	-32.67	-30.94
4	3.96484	0.26	21.72	12.58	21.98	12.84	56.00	46.00	-34.02	-33.16
5	14.15234	0.57	28.49	25.25	29.06	25.82	60.00	50.00	-30.94	-24.18
6	18.24219	0.67	35.95	29.45	36.62	30.12	60.00	50.00	-23.38	-19.88

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

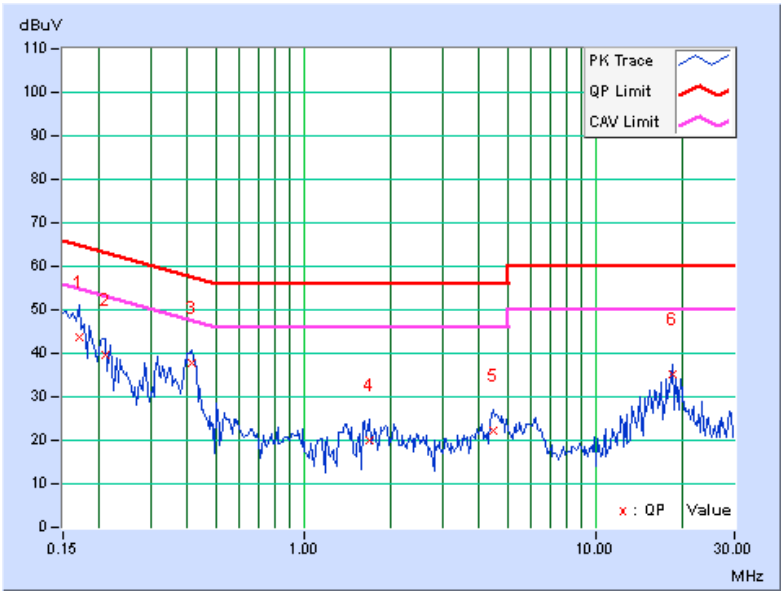


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	0.07	43.75	30.18	43.82	30.25	64.98	54.98	-21.16	-24.73
2	0.20859	0.07	39.59	26.14	39.66	26.21	63.26	53.26	-23.60	-27.05
3	0.41172	0.09	37.78	29.93	37.87	30.02	57.61	47.61	-19.74	-17.59
4	1.67969	0.16	19.86	10.54	20.02	10.70	56.00	46.00	-35.98	-35.30
5	4.46875	0.27	21.80	10.23	22.07	10.50	56.00	46.00	-33.93	-35.50
6	18.30469	0.66	34.68	28.13	35.34	28.79	60.00	50.00	-24.66	-21.21

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



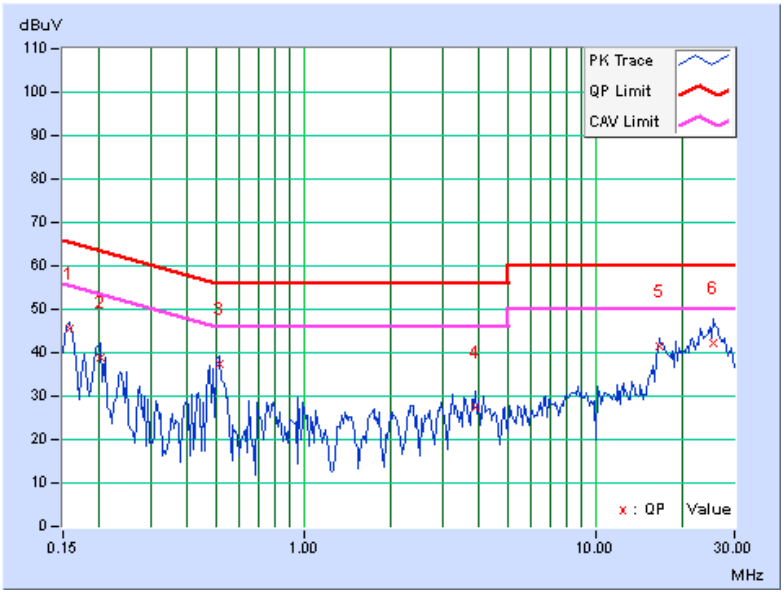
4.1.8 TEST RESULTS (MODE 2)

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.07	45.54	36.90	45.61	36.97	65.58	55.58	-19.97	-18.61
2	0.20078	0.07	38.71	28.14	38.78	28.21	63.58	53.58	-24.80	-25.37
3	0.51328	0.10	37.20	36.03	37.30	36.13	56.00	46.00	-18.70	-9.87
4	3.86328	0.25	27.20	19.22	27.45	19.47	56.00	46.00	-28.55	-26.53
5	16.60066	0.63	40.93	40.73	41.56	41.36	60.00	50.00	-18.44	-8.64
6	25.43359	0.86	41.25	35.87	42.11	36.73	60.00	50.00	-17.89	-13.27

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

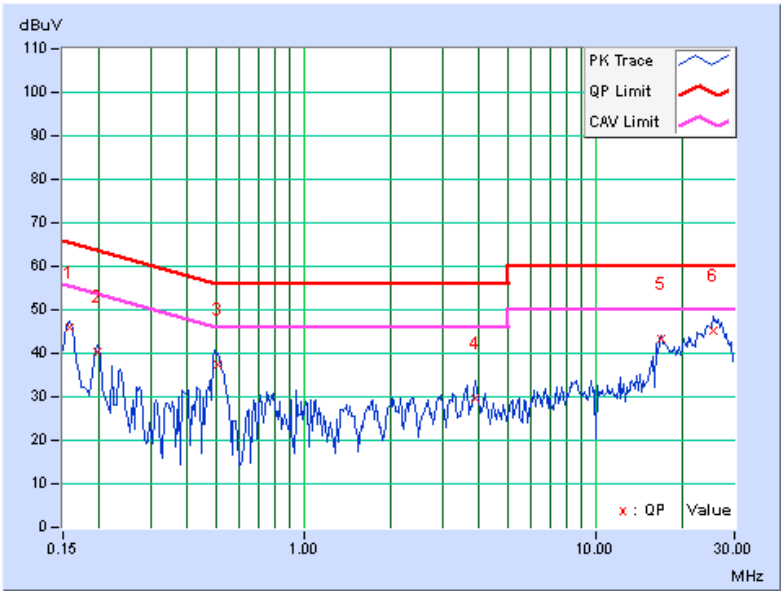


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.07	45.90	37.81	45.97	37.88	65.58	55.58	-19.60	-17.69
2	0.19687	0.07	40.32	32.33	40.39	32.40	63.74	53.74	-23.35	-21.34
3	0.50916	0.10	37.49	35.51	37.59	35.61	56.00	46.00	-18.41	-10.39
4	3.87500	0.26	29.43	22.50	29.69	22.76	56.00	46.00	-26.31	-23.24
5	**16.84766**	**0.63**	**42.52**	**41.93**	**43.15**	**42.56**	**60.00**	**50.00**	**-16.85**	**-7.44**
6	25.52344	0.86	44.17	39.13	45.03	39.99	60.00	50.00	-14.97	-10.01

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission Level – Limit value
4. Correction Factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: July 29 to Aug. 11, 2014

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

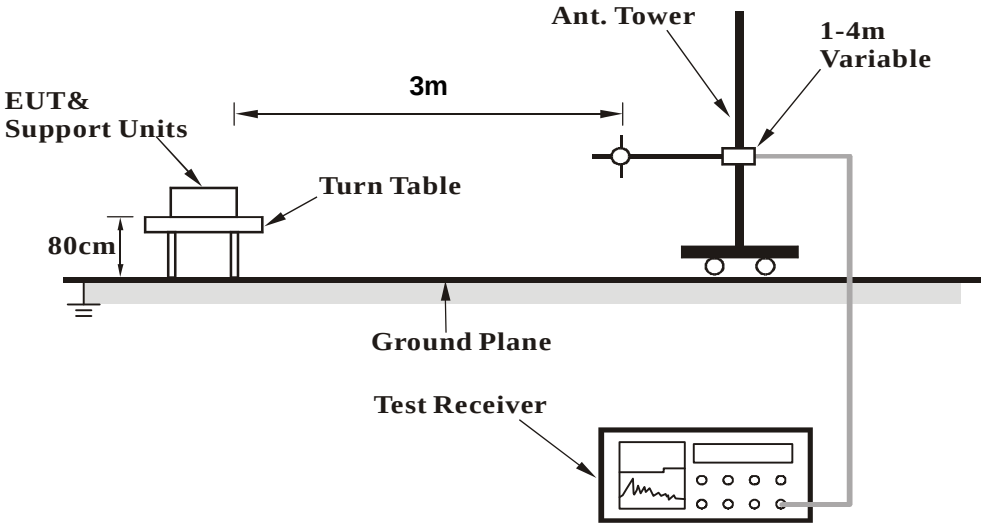
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

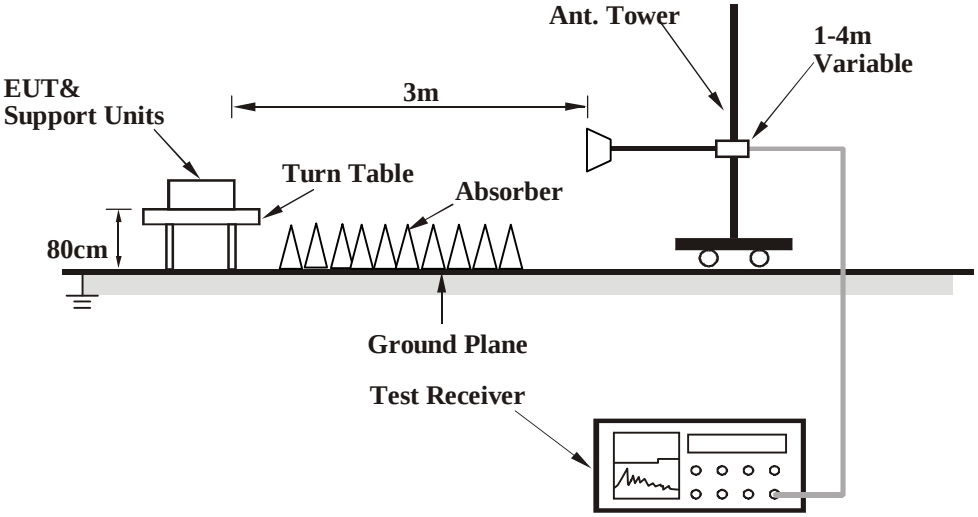
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11n (HT20)

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	250.00	40.0 QP	46.0	-6.0	1.00 H	280	53.62	-13.66
2	375.03	35.0 QP	46.0	-11.0	1.00 H	25	44.91	-9.91
3	500.01	32.8 QP	46.0	-13.2	1.50 H	32	39.74	-6.91
4	625.00	43.9 QP	46.0	-2.1	1.00 H	360	48.02	-4.08
5	749.98	40.0 QP	46.0	-6.0	1.00 H	344	41.62	-1.64
6	1000.00	36.9 QP	54.0	-17.1	1.00 H	292	34.92	2.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	51.10	32.1 QP	40.0	-7.9	1.00 V	176	45.04	-12.97
2	250.00	33.3 QP	46.0	-12.7	2.00 V	0	46.93	-13.66
3	375.03	32.7 QP	46.0	-13.4	1.50 V	281	42.56	-9.91
4	625.00	38.4 QP	46.0	-7.6	1.00 V	170	42.48	-4.08
5	749.98	40.5 QP	46.0	-5.5	1.00 V	10	42.14	-1.64
6	1000.00	36.0 QP	54.0	-18.1	1.50 V	208	33.95	2.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

ABOVE 1GHz DATA

802.11b

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2386.00	60.2 PK	74.0	-13.8	1.07 H	177	65.82	-5.62
2	2386.00	53.8 AV	54.0	-0.2	1.07 H	177	59.42	-5.62
3	*2412.00	117.6 PK			1.07 H	177	123.13	-5.53
4	*2412.00	115.5 AV			1.07 H	177	121.03	-5.53
5	4824.00	50.7 PK	74.0	-23.3	1.06 H	80	46.84	3.86
6	4824.00	43.3 AV	54.0	-10.7	1.06 H	80	39.44	3.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2386.00	54.4 PK	74.0	-19.6	1.50 V	244	60.02	-5.62
2	2386.00	43.6 AV	54.0	-10.4	1.50 V	244	49.22	-5.62
3	*2412.00	106.4 PK			1.50 V	244	111.93	-5.53
4	*2412.00	103.1 AV			1.50 V	244	108.63	-5.53
5	4824.00	57.1 PK	74.0	-16.9	1.00 V	318	53.24	3.86
6	4824.00	53.1 AV	54.0	-0.9	1.00 V	318	49.24	3.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1094.00	52.5 PK	74.0	-21.5	1.06 H	175	63.47	-10.97
2	1094.00	49.1 AV	54.0	-4.9	1.06 H	175	60.07	-10.97
3	2312.00	56.9 PK	74.0	-17.1	1.06 H	175	62.61	-5.71
4	2312.00	53.3 AV	54.0	-0.7	1.06 H	175	59.01	-5.71
5	*2437.00	121.2 PK			1.06 H	175	126.62	-5.42
6	*2437.00	119.2 AV			1.06 H	175	124.62	-5.42
7	2483.50	60.4 PK	74.0	-13.6	1.06 H	175	65.60	-5.20
8	2483.50	48.9 AV	54.0	-5.1	1.06 H	175	54.10	-5.20
9	4874.00	51.5 PK	74.0	-22.5	1.00 H	61	47.69	3.81
10	4874.00	43.7 AV	54.0	-10.3	1.00 H	61	39.89	3.81
11	7311.00	54.8 PK	74.0	-19.2	1.40 H	40	46.57	8.23
12	7311.00	42.8 AV	54.0	-11.2	1.40 H	40	34.57	8.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1094.00	48.3 PK	74.0	-25.7	1.53 V	240	59.27	-10.97
2	1094.00	44.6 AV	54.0	-9.4	1.53 V	240	55.57	-10.97
3	2312.00	51.4 PK	74.0	-22.6	1.53 V	240	57.11	-5.71
4	2312.00	49.3 AV	54.0	-4.7	1.53 V	240	55.01	-5.71
5	*2437.00	109.4 PK			1.53 V	240	114.82	-5.42
6	*2437.00	107.1 AV			1.53 V	240	112.52	-5.42
7	2483.50	58.3 PK	74.0	-15.7	1.53 V	240	63.50	-5.20
8	2483.50	46.5 AV	54.0	-7.5	1.53 V	240	51.70	-5.20
9	4874.00	57.0 PK	74.0	-17.0	1.13 V	317	53.19	3.81
10	4874.00	53.0 AV	54.0	-1.0	1.13 V	317	49.19	3.81
11	7311.00	54.1 PK	74.0	-19.9	1.34 V	219	45.87	8.23
12	7311.00	42.7 AV	54.0	-11.3	1.34 V	219	34.47	8.23

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	118.9 PK			1.05 H	177	124.21	-5.31
2	*2462.00	116.6 AV			1.05 H	177	121.91	-5.31
3	2487.50	64.6 PK	74.0	-9.4	1.05 H	177	69.80	-5.20
4	**2487.50**	**53.9 AV**	**54.0**	**-0.1**	**1.05 H**	**177**	**59.10**	**-5.20**
5	4924.00	51.2 PK	74.0	-22.8	1.00 H	75	47.40	3.80
6	4924.00	43.7 AV	54.0	-10.3	1.00 H	75	39.90	3.80
7	7386.00	54.6 PK	74.0	-19.4	1.36 H	29	46.05	8.55
8	7386.00	42.7 AV	54.0	-11.3	1.36 H	29	34.15	8.55
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.1 PK			1.54 V	241	112.41	-5.31
2	*2462.00	104.5 AV			1.54 V	241	109.81	-5.31
3	4924.00	53.7 PK	74.0	-20.3	1.11 V	316	49.90	3.80
4	4924.00	52.9 AV	54.0	-1.1	1.11 V	316	49.10	3.80
5	7386.00	54.1 PK	74.0	-19.9	1.37 V	235	45.55	8.55
6	7386.00	42.8 AV	54.0	-11.2	1.37 V	235	34.25	8.55

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

802.11g

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	69.2 PK	74.0	-4.8	1.06 H	193	74.80	-5.60
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.06 H**	**193**	**59.50**	**-5.60**
3	*2412.00	115.8 PK			1.06 H	193	121.33	-5.53
4	*2412.00	106.4 AV			1.06 H	193	111.93	-5.53
5	4824.00	52.3 PK	74.0	-21.7	1.00 H	62	48.44	3.86
6	4824.00	49.6 AV	54.0	-4.4	1.00 H	62	45.74	3.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	58.1 PK	74.0	-15.9	1.51 V	240	63.70	-5.60
2	2390.00	43.0 AV	54.0	-11.0	1.51 V	240	48.60	-5.60
3	*2412.00	106.2 PK			1.51 V	240	111.73	-5.53
4	*2412.00	95.8 AV			1.51 V	240	101.33	-5.53
5	4824.00	58.3 PK	74.0	-15.7	1.02 V	330	54.44	3.86
6	4824.00	46.4 AV	54.0	-7.6	1.02 V	330	42.54	3.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.04 H	190	74.10	-5.60
2	2390.00	50.9 AV	54.0	-3.1	1.04 H	190	56.50	-5.60
3	*2437.00	122.1 PK			1.04 H	190	127.52	-5.42
4	*2437.00	113.0 AV			1.04 H	190	118.42	-5.42
5	2483.50	71.5 PK	74.0	-2.5	1.04 H	190	76.70	-5.20
6	2483.50	53.3 AV	54.0	-0.7	1.04 H	190	58.50	-5.20
7	4874.00	52.2 PK	74.0	-21.8	1.02 H	61	48.39	3.81
8	4874.00	49.4 AV	54.0	-4.6	1.02 H	61	45.59	3.81
9	7311.00	55.2 PK	74.0	-18.8	1.45 H	53	46.97	8.23
10	7311.00	43.2 AV	54.0	-10.8	1.45 H	53	34.97	8.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	1.48 V	236	61.20	-5.60
2	2390.00	42.3 AV	54.0	-11.7	1.48 V	236	47.90	-5.60
3	*2437.00	112.1 PK			1.48 V	236	117.52	-5.42
4	*2437.00	102.0 AV			1.48 V	236	107.42	-5.42
5	2483.50	59.4 PK	74.0	-14.6	1.48 V	236	64.60	-5.20
6	2483.50	43.4 AV	54.0	-10.6	1.48 V	236	48.60	-5.20
7	4874.00	57.6 PK	74.0	-16.4	1.12 V	312	53.79	3.81
8	4874.00	45.9 AV	54.0	-8.1	1.12 V	312	42.09	3.81
9	7311.00	54.3 PK	74.0	-19.7	1.45 V	229	46.07	8.23
10	7311.00	42.9 AV	54.0	-11.1	1.45 V	229	34.67	8.23

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	116.8 PK			1.04 H	191	122.11	-5.31
2	*2462.00	107.4 AV			1.04 H	191	112.71	-5.31
3	2483.50	73.5 PK	74.0	-0.5	1.04 H	191	78.70	-5.20
4	2483.50	53.6 AV	54.0	-0.4	1.04 H	191	58.80	-5.20
5	4924.00	52.2 PK	74.0	-21.8	1.00 H	50	48.40	3.80
6	4924.00	49.5 AV	54.0	-4.5	1.00 H	50	45.70	3.80
7	7386.00	55.1 PK	74.0	-18.9	1.48 H	65	46.55	8.55
8	7386.00	43.0 AV	54.0	-11.0	1.48 H	65	34.45	8.55
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.8 PK			1.47 V	229	112.11	-5.31
2	*2462.00	96.4 AV			1.47 V	229	101.71	-5.31
3	2483.50	58.0 PK	74.0	-16.0	1.56 V	234	63.20	-5.20
4	2483.50	42.9 AV	54.0	-11.1	1.56 V	234	48.10	-5.20
5	4924.00	57.8 PK	74.0	-16.2	1.06 V	327	54.00	3.80
6	4924.00	45.9 AV	54.0	-8.1	1.06 V	327	42.10	3.80
7	7386.00	53.9 PK	74.0	-20.1	1.41 V	221	45.35	8.55
8	7386.00	42.8 AV	54.0	-11.2	1.41 V	221	34.25	8.55

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

802.11n (HT20)

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	68.4 PK	74.0	-5.6	1.07 H	183	74.00	-5.60
2	2390.00	52.7 AV	54.0	-1.3	1.07 H	183	58.30	-5.60
3	*2412.00	116.3 PK			1.07 H	183	121.83	-5.53
4	*2412.00	107.2 AV			1.07 H	183	112.73	-5.53
5	4824.00	51.7 PK	74.0	-22.3	1.03 H	73	47.84	3.86
6	4824.00	49.3 AV	54.0	-4.7	1.03 H	73	45.44	3.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	58.2 PK	74.0	-15.8	1.56 V	240	63.80	-5.60
2	2390.00	43.3 AV	54.0	-10.7	1.56 V	240	48.90	-5.60
3	*2412.00	106.5 PK			1.56 V	240	112.03	-5.53
4	*2412.00	96.0 AV			1.56 V	240	101.53	-5.53
5	4824.00	58.7 PK	74.0	-15.3	1.00 V	335	54.84	3.86
6	4824.00	46.8 AV	54.0	-7.2	1.00 V	335	42.94	3.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.6 PK	74.0	-3.4	1.07 H	199	76.20	-5.60
2	2390.00	52.5 AV	54.0	-1.5	1.07 H	199	58.10	-5.60
3	*2437.00	124.1 PK			1.07 H	199	129.52	-5.42
4	*2437.00	113.0 AV			1.07 H	199	118.42	-5.42
5	2483.50	70.5 PK	74.0	-3.5	1.07 H	199	75.70	-5.20
6	2483.50	53.8 AV	54.0	-0.2	1.07 H	199	59.00	-5.20
7	4874.00	52.3 PK	74.0	-21.7	1.05 H	62	48.49	3.81
8	4874.00	49.5 AV	54.0	-4.5	1.05 H	62	45.69	3.81
9	7311.00	55.5 PK	74.0	-18.5	1.46 H	43	47.27	8.23
10	7311.00	43.5 AV	54.0	-10.5	1.46 H	43	35.27	8.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.4 PK	74.0	-17.6	1.44 V	247	62.00	-5.60
2	2390.00	42.8 AV	54.0	-11.2	1.44 V	247	48.40	-5.60
3	*2437.00	112.3 PK			1.48 V	234	117.72	-5.42
4	*2437.00	102.0 AV			1.48 V	234	107.42	-5.42
5	2483.50	59.3 PK	74.0	-14.7	1.45 V	230	64.50	-5.20
6	2483.50	43.4 AV	54.0	-10.6	1.45 V	230	48.60	-5.20
7	4874.00	58.1 PK	74.0	-15.9	1.14 V	321	54.29	3.81
8	4874.00	46.4 AV	54.0	-7.6	1.14 V	321	42.59	3.81
9	7311.00	54.4 PK	74.0	-19.6	1.46 V	239	46.17	8.23
10	7311.00	42.7 AV	54.0	-11.3	1.46 V	239	34.47	8.23

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	118.4 PK			1.05 H	200	123.71	-5.31
2	*2462.00	107.0 AV			1.05 H	200	112.31	-5.31
3	2483.50	69.1 PK	74.0	-4.9	1.05 H	200	74.30	-5.20
4	2483.50	53.8 AV	54.0	-0.2	1.05 H	200	59.00	-5.20
5	4924.00	52.6 PK	74.0	-21.4	1.04 H	70	48.80	3.80
6	4924.00	49.7 AV	54.0	-4.3	1.04 H	70	45.90	3.80
7	7386.00	55.5 PK	74.0	-18.5	1.50 H	36	46.95	8.55
8	7386.00	43.4 AV	54.0	-10.6	1.50 H	36	34.85	8.55
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.8 PK			1.49 V	243	112.11	-5.31
2	*2462.00	96.6 AV			1.49 V	243	101.91	-5.31
3	2483.50	58.3 PK	74.0	-15.7	1.54 V	230	63.50	-5.20
4	2483.50	43.2 AV	54.0	-10.8	1.54 V	230	48.40	-5.20
5	4924.00	57.6 PK	74.0	-16.4	1.01 V	326	53.80	3.80
6	4924.00	45.7 AV	54.0	-8.3	1.01 V	326	41.90	3.80
7	7386.00	54.1 PK	74.0	-19.9	1.38 V	205	45.55	8.55
8	7386.00	43.3 AV	54.0	-10.7	1.38 V	205	34.75	8.55

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	1.09 H	172	71.80	-5.60
2	2390.00	53.8 AV	54.0	-0.2	1.09 H	172	59.40	-5.60
3	*2422.00	112.0 PK			1.09 H	172	117.49	-5.49
4	*2422.00	100.9 AV			1.09 H	172	106.39	-5.49
5	4844.00	51.7 PK	74.0	-22.3	1.00 H	54	47.86	3.84
6	4844.00	49.5 AV	54.0	-4.5	1.00 H	54	45.66	3.84
7	7266.00	55.9 PK	74.0	-18.1	1.53 H	44	47.84	8.06
8	7266.00	43.6 AV	54.0	-10.4	1.53 H	44	35.54	8.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.4 PK	74.0	-17.6	1.44 V	235	62.00	-5.60
2	2390.00	42.5 AV	54.0	-11.5	1.44 V	235	48.10	-5.60
3	*2422.00	104.1 PK			1.44 V	235	109.59	-5.49
4	*2422.00	90.6 AV			1.44 V	235	96.09	-5.49
5	4844.00	58.2 PK	74.0	-15.8	1.13 V	319	54.36	3.84
6	4844.00	46.7 AV	54.0	-7.3	1.13 V	319	42.86	3.84
7	7266.00	54.8 PK	74.0	-19.2	1.49 V	248	46.74	8.06
8	7266.00	43.3 AV	54.0	-10.7	1.49 V	248	35.24	8.06

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.6 PK	74.0	-3.4	1.04 H	198	76.20	-5.60
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.04 H**	**198**	**59.50**	**-5.60**
3	*2437.00	116.5 PK			1.04 H	198	121.92	-5.42
4	*2437.00	105.3 AV			1.04 H	198	110.72	-5.42
5	2483.50	69.4 PK	74.0	-4.6	1.04 H	198	74.60	-5.20
6	2483.50	52.8 AV	54.0	-1.2	1.04 H	198	58.00	-5.20
7	4874.00	51.7 PK	74.0	-22.3	1.00 H	58	47.89	3.81
8	4874.00	49.2 AV	54.0	-4.8	1.00 H	58	45.39	3.81
9	7311.00	56.1 PK	74.0	-17.9	1.47 H	54	47.87	8.23
10	7311.00	44.0 AV	54.0	-10.0	1.47 H	54	35.77	8.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.7 PK	74.0	-17.3	1.45 V	239	62.30	-5.60
2	2390.00	43.3 AV	54.0	-10.7	1.45 V	239	48.90	-5.60
3	*2437.00	104.6 PK			1.49 V	226	110.02	-5.42
4	*2437.00	94.1 AV			1.49 V	226	99.52	-5.42
5	2483.50	59.4 PK	74.0	-14.6	1.49 V	245	64.60	-5.20
6	2483.50	43.4 AV	54.0	-10.6	1.49 V	245	48.60	-5.20
7	4874.00	57.8 PK	74.0	-16.2	1.13 V	316	53.99	3.81
8	4874.00	46.2 AV	54.0	-7.8	1.13 V	316	42.39	3.81
9	7311.00	54.1 PK	74.0	-19.9	1.48 V	249	45.87	8.23
10	7311.00	42.5 AV	54.0	-11.5	1.48 V	249	34.27	8.23

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	115.4 PK			1.04 H	198	120.76	-5.36
2	*2452.00	104.4 AV			1.04 H	198	109.76	-5.36
3	2483.50	69.1 PK	74.0	-4.9	1.04 H	198	74.30	-5.20
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.04 H**	**198**	**59.10**	**-5.20**
5	4904.00	52.7 PK	74.0	-21.3	1.04 H	73	48.91	3.79
6	4904.00	49.9 AV	54.0	-4.1	1.04 H	73	46.11	3.79
7	7356.00	55.8 PK	74.0	-18.2	1.46 H	59	47.37	8.43
8	7356.00	43.9 AV	54.0	-10.1	1.46 H	59	35.47	8.43
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.6 PK			1.44 V	236	109.96	-5.36
2	*2452.00	93.2 AV			1.44 V	236	98.56	-5.36
3	2483.50	56.1 PK	74.0	-17.9	1.47 V	224	61.30	-5.20
4	2483.50	42.9 AV	54.0	-11.1	1.47 V	224	48.10	-5.20
5	4904.00	58.3 PK	74.0	-15.7	1.10 V	327	54.51	3.79
6	4904.00	46.5 AV	54.0	-7.5	1.10 V	327	42.71	3.79
7	7356.00	54.3 PK	74.0	-19.7	1.51 V	256	45.87	8.43
8	7356.00	42.9 AV	54.0	-11.1	1.51 V	256	34.47	8.43

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 16, 2014

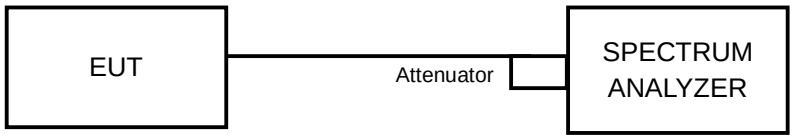
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.12	0.5	PASS
6	2437	10.13	0.5	PASS
11	2462	10.11	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.56	0.5	PASS
6	2437	16.64	0.5	PASS
11	2462	16.63	0.5	PASS

802.11n (HT20)

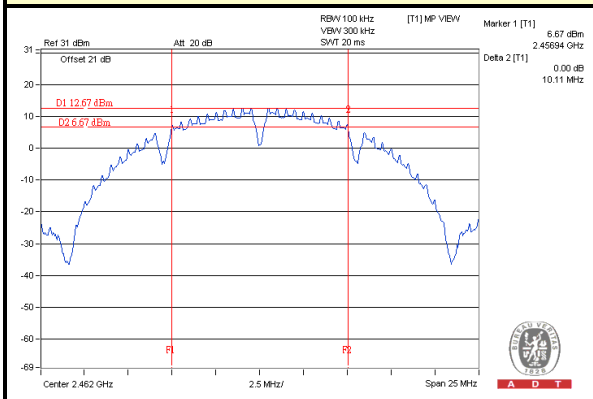
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.87	17.74	0.5	PASS
6	2437	17.83	17.77	0.5	PASS
11	2462	17.86	17.77	0.5	PASS

802.11n (HT40)

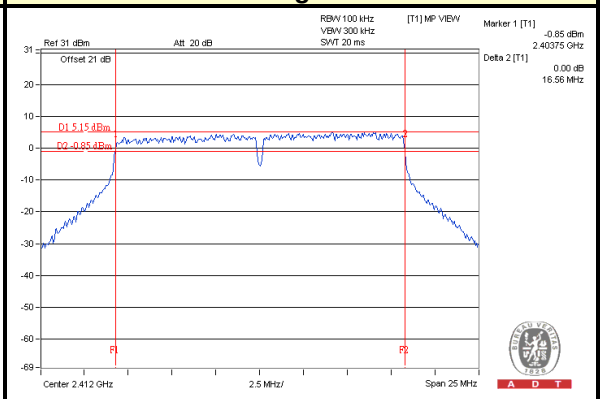
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.61	36.40	0.5	PASS
6	2437	36.48	36.53	0.5	PASS
9	2452	36.45	36.50	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

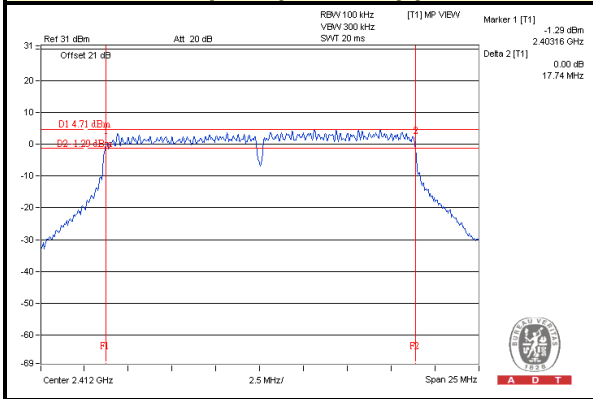
802.11b : CH11



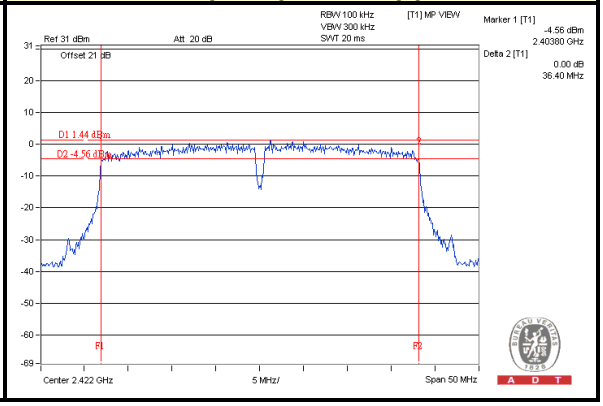
802.11g : CH1



802.11n (HT20) / Chain (1) : CH1



802.11n (HT40) / Chain (1) : CH3



4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 16, 2014

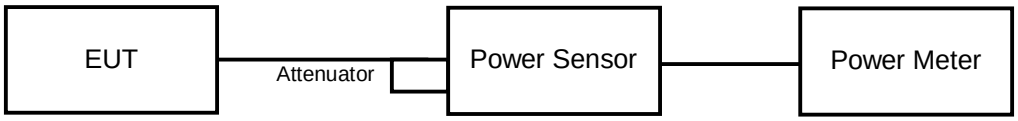
4.4.3 TEST PROCEDURES

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the average power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	176.198	22.46	30	PASS
6	2437	416.869	26.20	30	PASS
11	2462	229.615	23.61	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	102.802	20.12	30	PASS
6	2437	519.996	27.16	30	PASS
11	2462	118.032	20.72	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	18.46	18.56	141.925	21.52	30	PASS
6	2437	26.91	26.92	982.948	29.93	30	PASS
11	2462	20.79	20.37	228.843	23.60	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	17.83	17.89	122.192	20.87	30	PASS
6	2437	22.52	22.67	363.576	25.61	30	PASS
9	2452	20.71	20.99	243.364	23.86	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 16, 2014

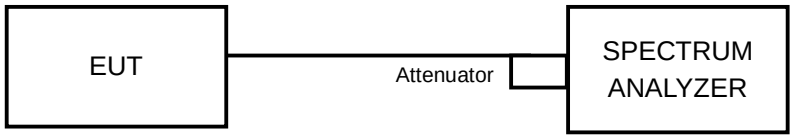
4.5.3 TEST PROCEDURE

1. Set the RBW = 10 kHz, VBW =30 kHz, Detector = power averaging (RMS).
2. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW
3. Sweep time = auto couple.
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-5.55	8	PASS
6	2437	-2.04	8	PASS
11	2462	-4.85	8	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
1	2412	-9.88	8	PASS
6	2437	-2.78	8	PASS
11	2462	-9.01	8	PASS

802.11n (HT20), 2Tx

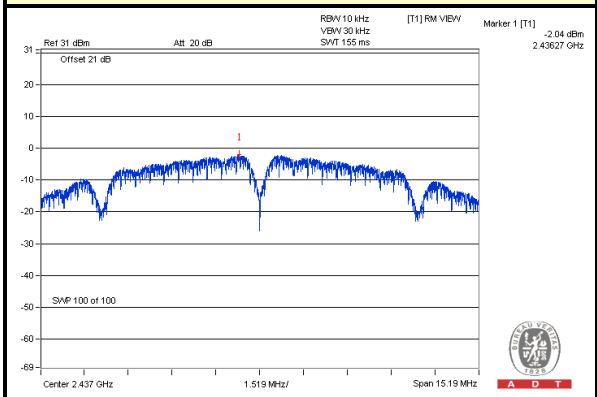
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	1	2412	-12.45	3.01	-9.44	8	PASS
	6	2437	-3.98	3.01	-0.97	8	PASS
	11	2462	-9.70	3.01	-6.69	8	PASS
1	1	2412	-11.99	3.01	-8.98	8	PASS
	6	2437	-3.94	3.01	-0.93	8	PASS
	11	2462	-10.26	3.01	-7.25	8	PASS

802.11n (HT40)

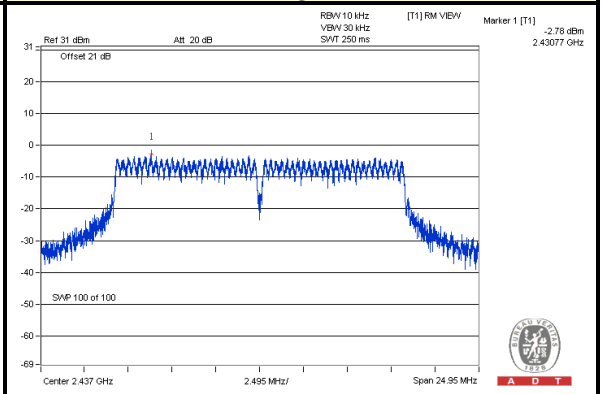
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	3	2422	-14.46	3.01	-11.45	8	PASS
	6	2437	-9.80	3.01	-6.79	8	PASS
	9	2452	-11.30	3.01	-8.29	8	PASS
1	3	2422	-15.32	3.01	-12.31	8	PASS
	6	2437	-9.85	3.01	-6.84	8	PASS
	9	2452	-12.29	3.01	-9.28	8	PASS

SPECTRUM PLOT OF WORST VALUE

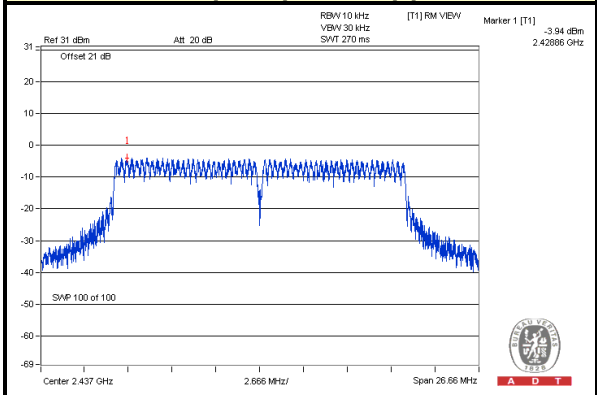
802.11b : CH6



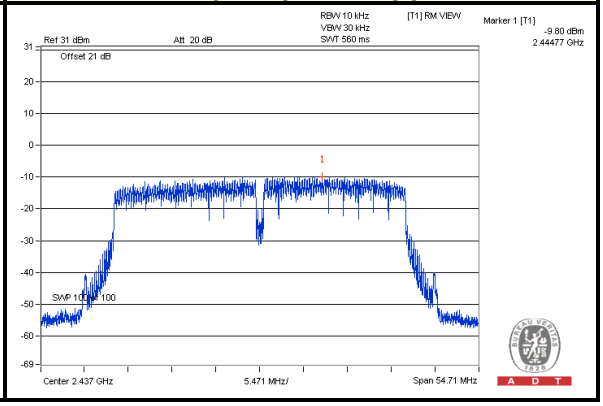
802.11g : CH6



802.11n (HT20) / Chain(1) : CH6



802.11n (HT40) / Chain(0) : CH6



4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : Aug. 16, 2014

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

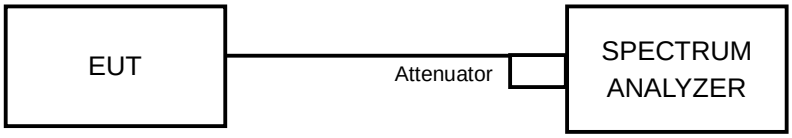
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

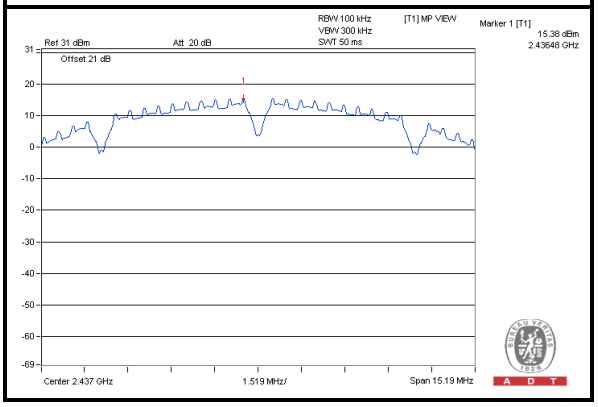
Same as Item 4.3.6

4.6.7 TEST RESULTS

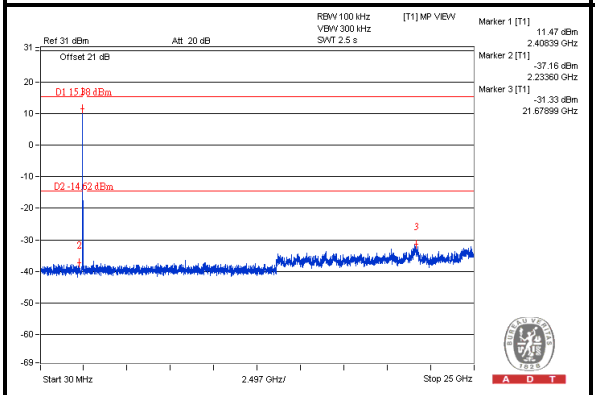
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11b

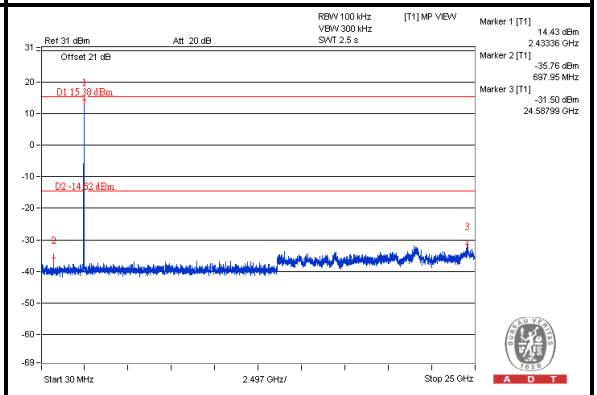
Maximum REF



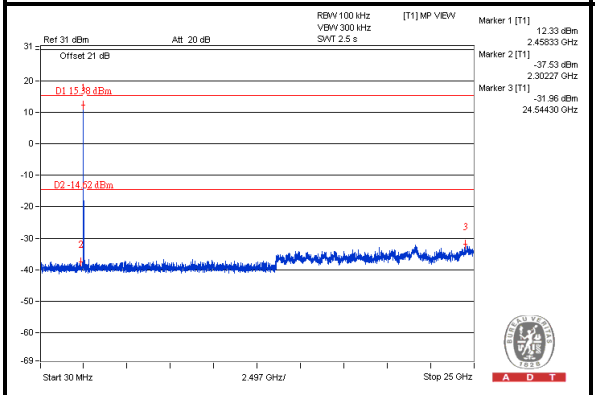
CH 1



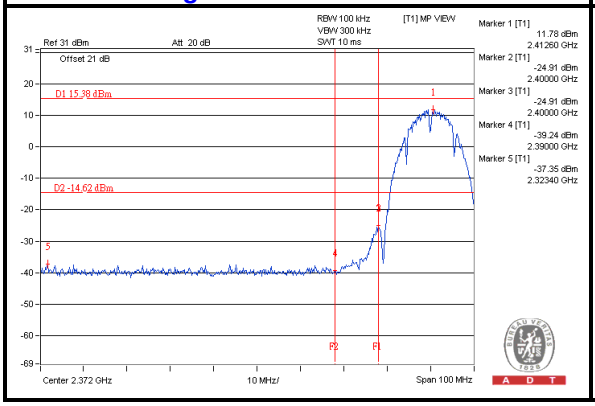
CH 6



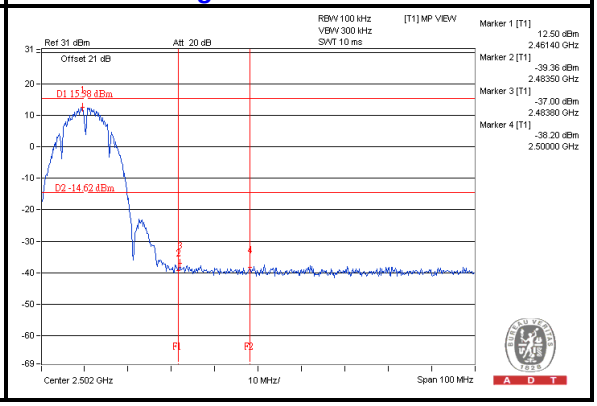
CH 11



CH 1 Band edge

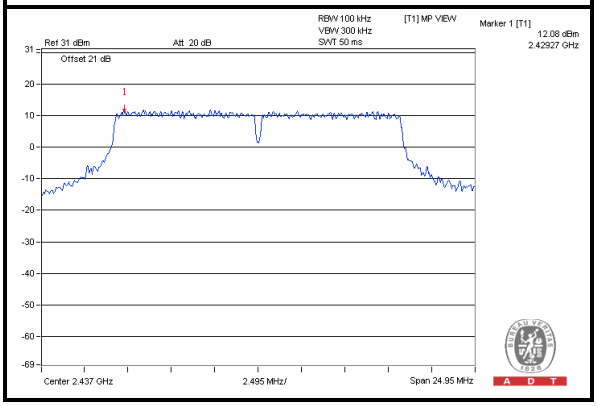


CH 11 Band edge

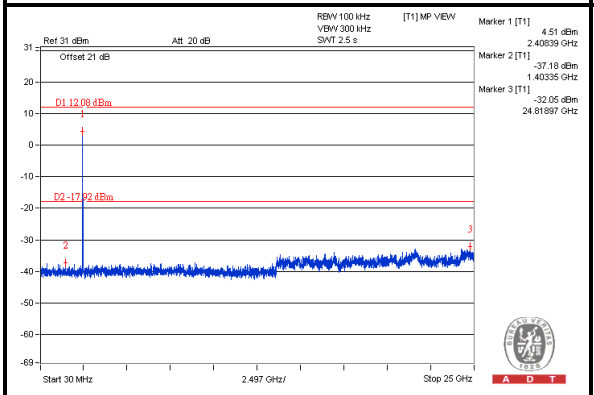


802.11g

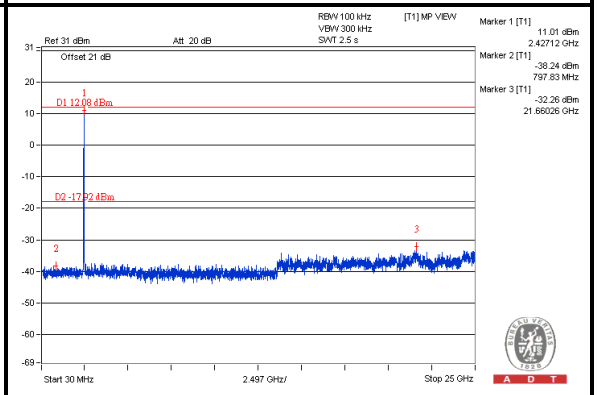
Maximum REF



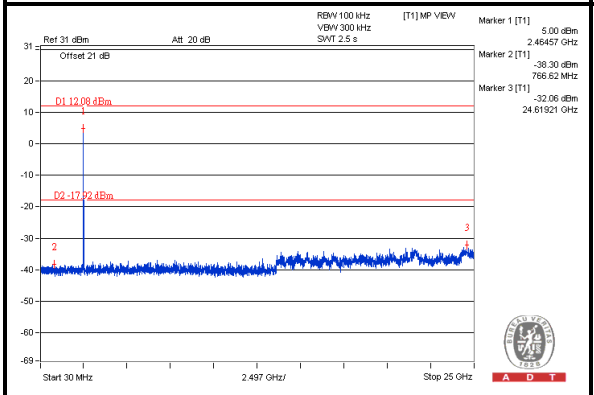
CH 1



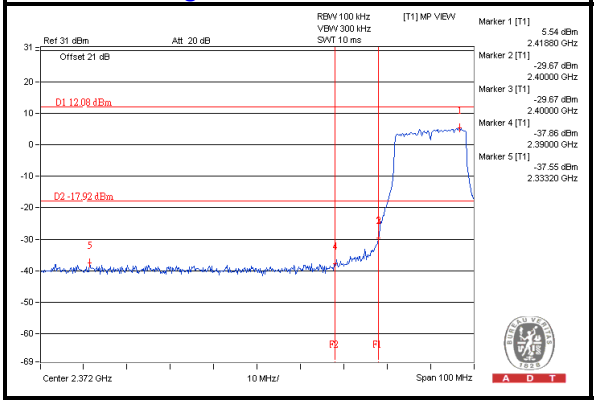
CH 6



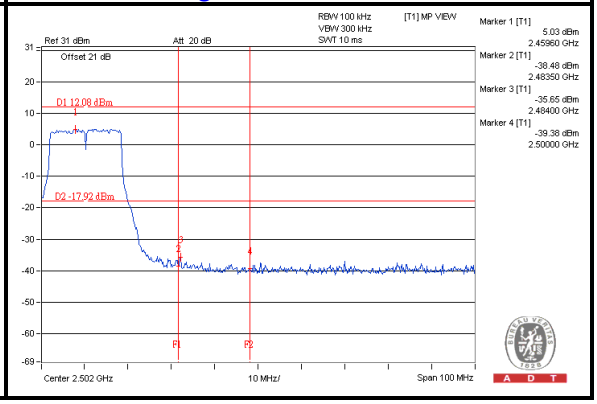
CH 11



CH 1 Band edge

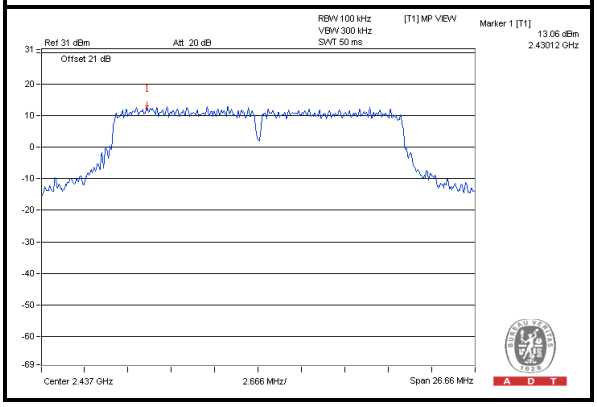


CH 11 Band edge



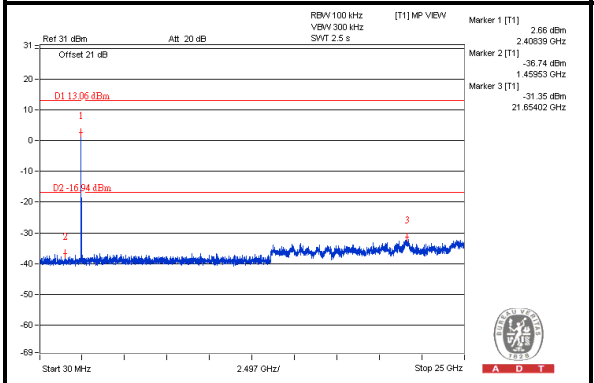
802.11n(HT20)

Maximum REF

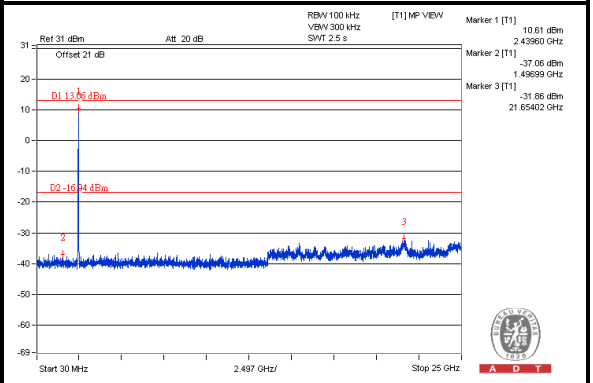


Chain 0

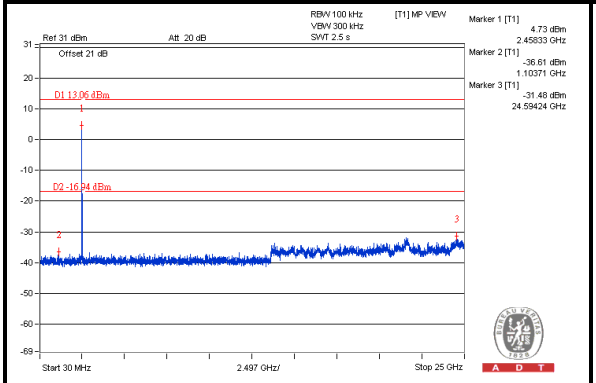
CH 1



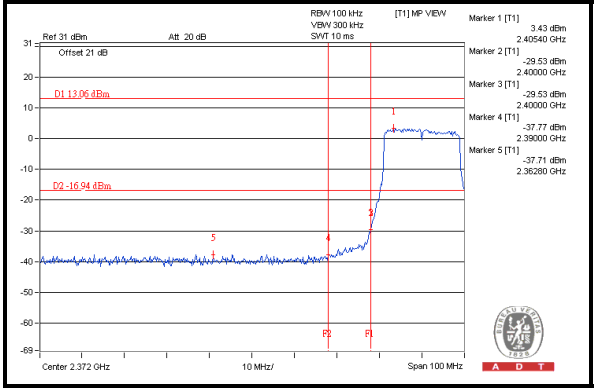
CH 6



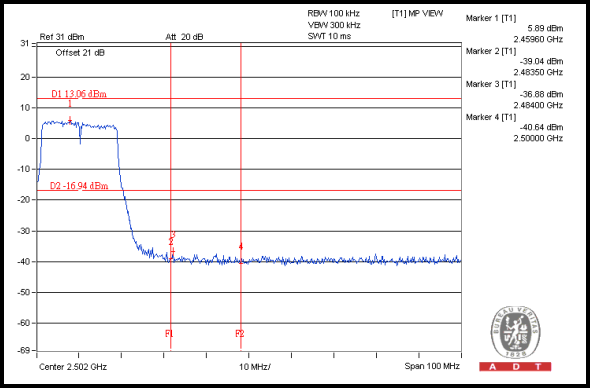
CH 11



CH 1 Band edge

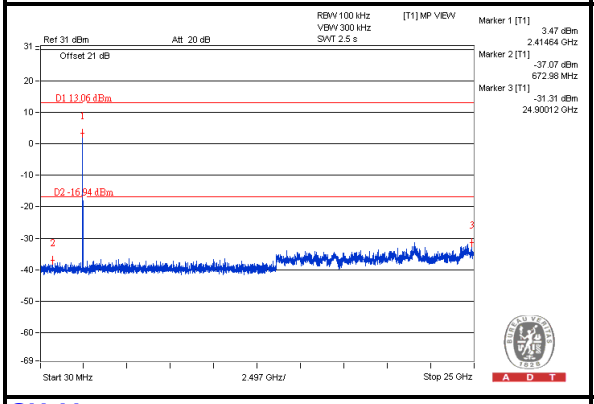


CH 11 Band edge

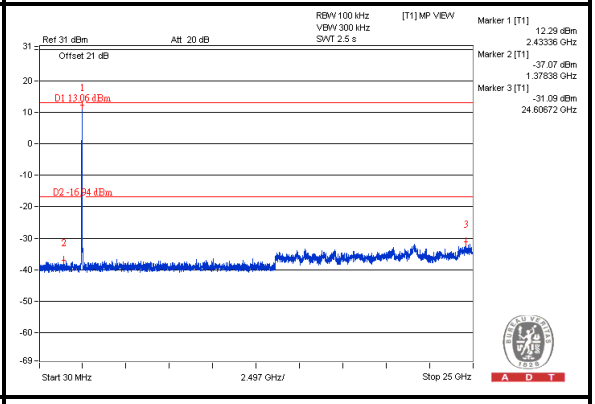


Chain 1

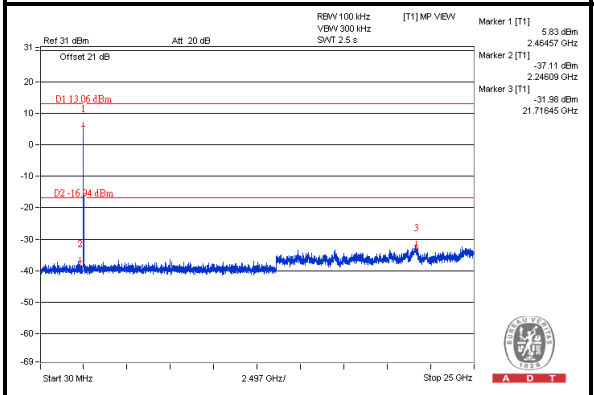
CH 1



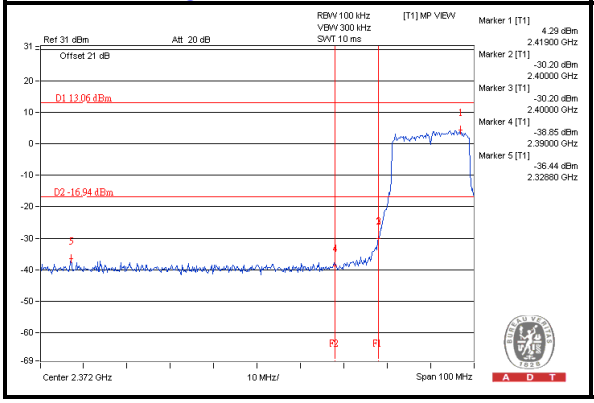
CH 6



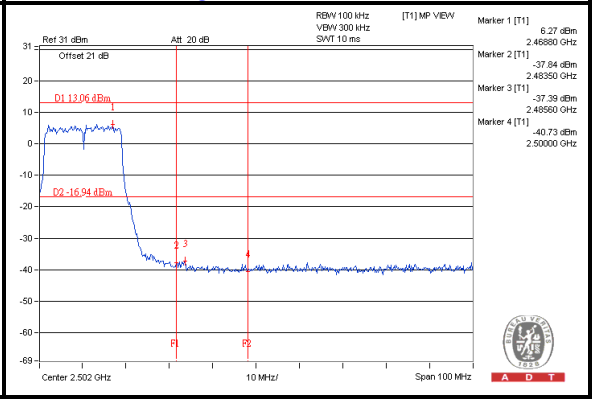
CH 11



CH 1 Band edge

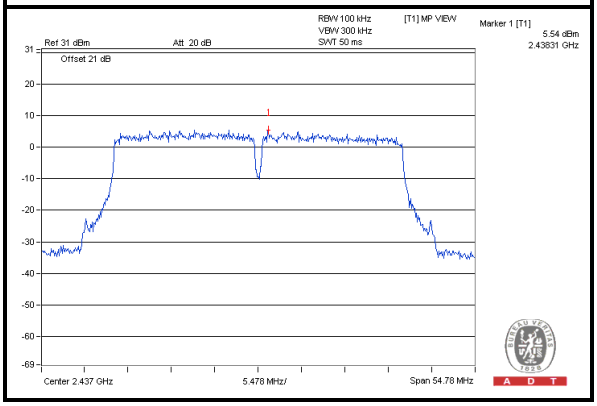


CH 11 Band edge



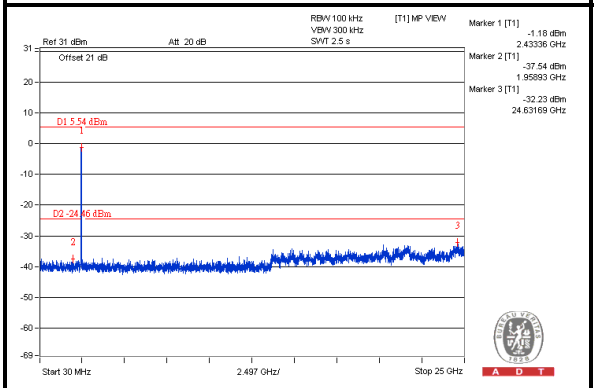
802.11n(HT40)

Maximum REF

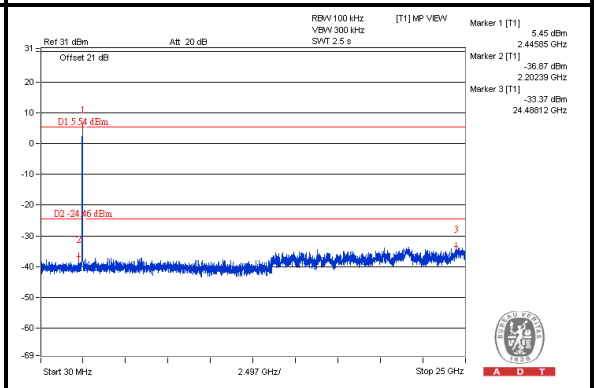


Chain 0

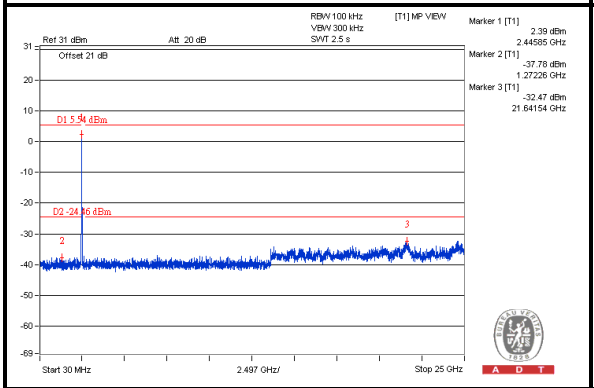
CH 3



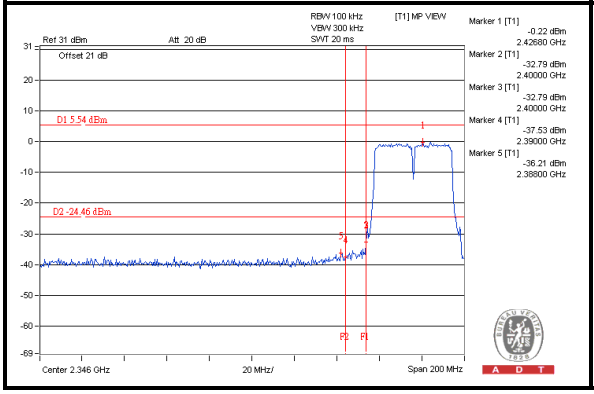
CH 6



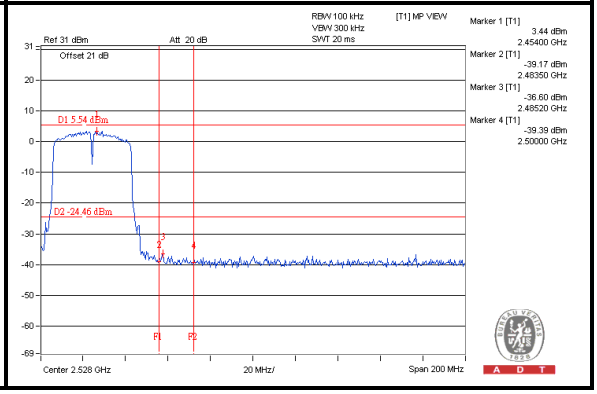
CH 9



CH 3 Band edge

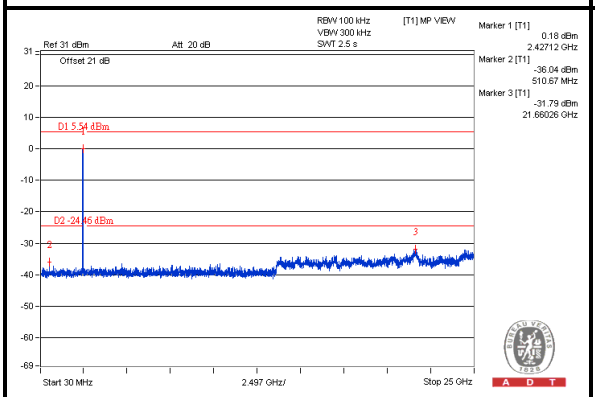


CH 9 Band edge

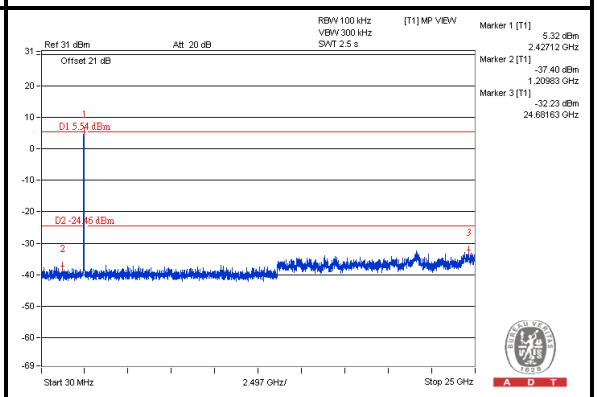


Chain 1

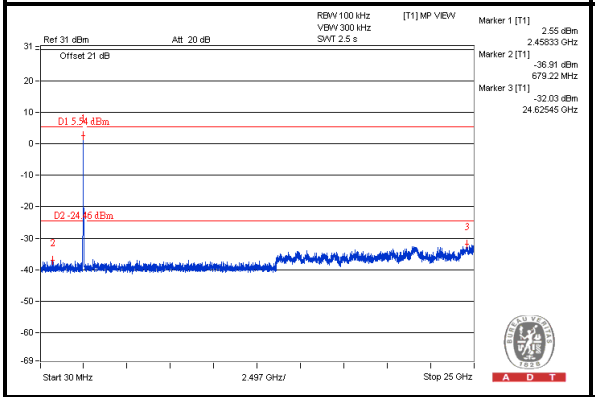
CH 3



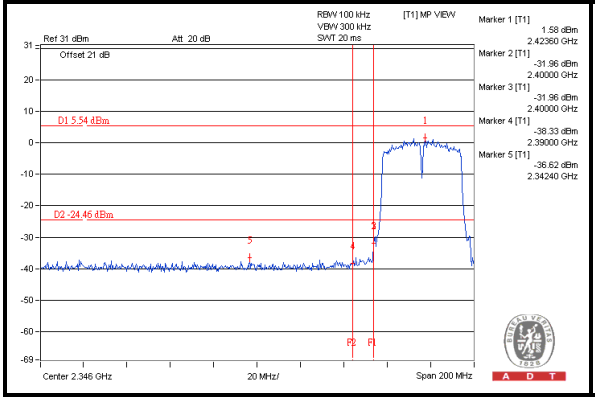
CH 6



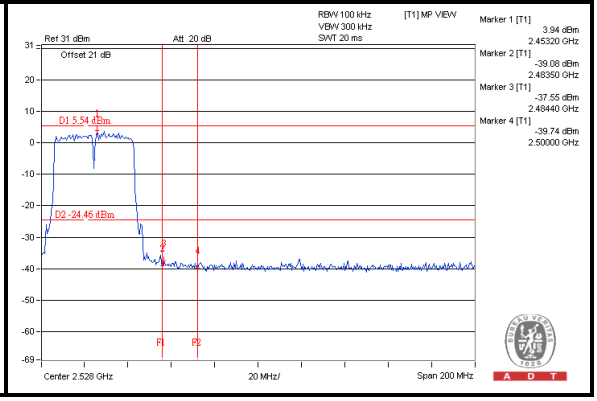
CH 9



CH 3 Band edge



CH 9 Band edge



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

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